BIRDS IN THE KĪPAHULU DISTRICT OF HALEAKALA NATIONAL PARK

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INTRODUCTION

When the Europeans arrived in Hawai'i in 1778, there were 69 forms (including species and subspecies) of birds endemic to Hawai'i. Today, 14 of these species, containing 16 subspecies, are extinct, and 29 forms are considered endangered. Of the 29 forms, eight may be found in Hawai'i's two National Parks: three in Hawaii Volcanoes National Park (HAVO) and five in the Kīpahulu District of Haleakala National Park (HALE).

At present, the Kīpahulu District (particularly Kīpahulu Valley) provides virtually the only major tract of suitable forest bird habitat on Maui that enjoys rigorous protection. As a result, this area may be considered critical for the continued survival of the five endangered bird species found there.

Understandably, there has been much interest in the birds of the Kīpahulu District. In spite of this, little ornithological work has been done in the region. The Kīpahulu Valley Expedition (Warner 1967) is notable here, and resulted in the rediscovery of two bird species previously thought extinct (Banko 1967). Two National Science Foundation (NSF) Student-Originated Studies Projects--the first in 1973 and the second in 1976 (Peterson 1976)--provided ecological inventories of parts of the Kīpahulu District including the Manawainui Planeze and parts of the upper Hāna rain forest. In this paper, we will report preliminary results of surveys of the avifauna of the Kīpahulu District conducted under the auspices of the National Park Service (NPS).

MATERIALS AND METHODS

Surveys of the Kīpahulu District began formally in 1976 and are ongoing. While our recent work has been concentrated in Kīpahulu Valley, the outlying areas of Kuiki, Kalapawili, Wai-'ānapanapa, and Pu'u'alaea have been studied as well. A total of 105 person-days were spent in the field: 67 of these were in Kīpahulu Valley; 13 were in the Wai'ānapanapa area; 10 were in Kuiki; and an additional 15 were in the Pu'u'alaea region.

In order to evaluate the seasonality of bird distributions in the Kīpahulu District, our trips are scheduled on a quarterly basis. So far (as of June 1980), three trips have been made in each of the months of March, June, and August; one trip was made in January when the weather is not usually conducive to field work.

Censuses were conducted using both transect counts (Emlen 1971) and circular plot counts (Reynolds et al. 1980). Sighting records for rare species did not occur often during count periods, and were tabulated separately.

Due to the preliminary nature of our results, in this paper we will emphasize bird distributions and count frequencies rather than present density values derived from the count data.

RESULTS AND DISCUSSION

A total of 27 bird species representing 13 families have been found in the Kīpahulu District to date (Table 1). Of these, 33% are endemic, 18% are indigenous, and 48% are exotic. Five of the native species are considered endangered: the Nēnē (Branta sandvicensis); the Crested Honeycreeper or 'Ākohekohe (Palmeria dolei); the Maui Parrotbill (Pseudonestor xanthophrys); the Maui Nukupu'u (Hemignathus lucidus affinus); and the Maui 'Ākepa (Loxops coccineus ochraceus). A sixth endangered species (the Po'o Uli, Melamprosops phaeosoma) is found in the Pu'u'alaea region; however, so far, we have been unsuccessful in our search for this species in the Park.

While nearly half of the species in the Kīpahulu District are exotic, only two (the Japanese White-eye, Zosterops japonicus, and the Red-billed Leiothrix, Leiothrix lutea) are common throughout the region. The rest fall into three basic distributional categories: those common below about 3000 feet in Kīpahulu Valley (e.g., the Cardinal--Cardinalis cardinalis; the Chinese Thrush--Garrulax canorus); those found primarily in the pastures of lower Kīpahulu (e.g., the Common Myna--Acridotheres tristis); and those found primarily in the high elevation Deschampsia grasslands, such as the Pheasant (Phasianus colchicus) and the Skylark (Alauda arvensis).

Count frequencies of exotic species are highest at the lower elevations, particularly within 2500 feet of sea level. While exotics are present at higher elevations, they are generally very much less common.

Native passerine species occur in the Kīpahulu District from tree line, between 6700 and 6800 feet, down as far as 1600 feet

in Kīpahulu Valley. The lower elevational limit for native passerines in our study is considerably below the 2800 foot lower limit noted by the Kīpahulu Valley Expedition. It may be that this apparent range increase represents a seasonal difference which was not apparent in the 1967 study.

Amongst the four more common native passerines, two basic distribution patterns occur. The first, exemplified by the distribution of the 'Amakihi (Loxops virens) and the 'Apapane (Himatione sanguinea), is that of an extensive range from tree line to between 2000 and 1600 feet above sea level. The second pattern is seen in more specialized species, such as the 'I'iwi (Vestiaria coccinea) and the Maui Creeper (Loxops maculata newtoni), which do not appear to have such broad ranges. The Maui Creeper, for example, occurs from tree line to 3500 feet. A similar variation in altitudinal range occurs in the native species of the east slope of Mauna Loa on the island of Hawai'i (Conant 1975).

Superimposed on the variations in altitudinal range from species to species is a seasonal variation in altitudinal range within each species. The more common honeycreepers exhibit their widest altitudinal ranges in the spring and early summer, and all but one, the 'Apapane, show their narrowest altitudinal ranges in late summer and fall. We were able to collect data on seasonality for only one of the four endangered passerines found in the Kīpahulu District. This species, the Crested Honeycreeper, shows a pattern similar to that of the 'Apapane, with a narrow altitudinal range in March and a broader range in June and August. For the Crested Honeycreeper, this shift in altitudinal range may be correlated with its feeding ecology: in March when its range appears to be most limited, we observed no feeding territoriality, whereas this behavior was quite common in June and August when its range was more extensive. Carpenter and MacMillen (1976) noted that the feeding territoriality seen in the 'I'iwi was strongly correlated with moderate to high levels of nectar availability. This suggests that nectar availability may be a primary causal factor behind the seasonal shifts seen in the native passerines.

Of particular interest and concern are the endangered species found within the Kīpahulu District. As mentioned earlier, five and possibly six of these occur in the region (Figs. 1 & 2). Two of the five are found fairly widely in the District. The remaining three (all forest birds) were sighted very infrequently, and may have a patchy distribution over broad geographical ranges, such as seen in some of the Hawai'i Island endangered species. Distributions or sighting records of each of the endangered species are discussed below.

The Nēnē is the only non-passerine endangered species found in the Kīpahulu District, and the only one which is also found in the adjoining Crater District. It is not uncommon in the alpine

Deschampsia grasslands of Kuiki and Kalapawili. Included in the groups of Nēnē seen in these areas were occasional unbanded birds, presumably offspring of released birds.

Crested Honeycreepers were frequently observed within a narrow altitudinal band. In some parts of the Kīpahulu District such as in the Wai'ānapanapa region we consider it to be locally common. The upper elevational limits of this bird occur at the tree line, about 6800 feet. In spring months, Crested Honeycreepers are found down to about 5500 feet. In the summer, however, they may be found at lower elevations: sightings which occurred in August included several at 4700 feet in upper Kīpahulu Valley, and one as low as 3600 feet in lower Kipahulu Valley. At all times of the year, this species is decidedly more common above 5500 feet, and at times seems to be particularly common in the first 500 feet of elevation below the tree line.

The Maui Parrotbill has been seen in recent years in the Pu'u'alaea area and in Kīpahulu Valley (Banko 1967; Shallenberger 1974, for example). We were fortunate to have had two definite sightings of this bird, and some unverifiable aural detections. One of the visual detections occurred in the Pu'u'alaea area, the other occurred within a quarter mile of Wai'ānapanapa. The latter sighting appears to be a new record for the species in that location in recent years. One of the aural detections occurred in Kīpahulu Valley, at about 5600 feet elevation near the south wall of the Valley. No Parrotbill detections have occurred in the area where Banko rediscovered this species in 1967. The second aural detection occurred in the forest below Kuiki at about 6700 feet; if true, this aural detection represents another possible record in an area where this species has not been observed recently.

Two sightings of the Maui Nukupu'u have occurred to this date. Both were between 4780 and 4820 feet near the edge of the escarpment in Kipahulu Valley, and are well below the recent sightings of the bird in Kipahulu Valley (Banko 1967). The first sighting (by Conant) occurred at 4780 feet, in August 1978; the second (by Stemmermann) occurred the following March at 4820 feet. The proximity of the two observations suggests that they were of the same individual. Despite further intensive work in the same area no other detections of this species have occurred.

The Maui 'Ākepa, sighted by Casey in 1973, and by Scott and Sincock in 1977, had not been reported by members of the Kīpahulu Valley Expedition. The previous sightings occurred well outside of Kīpahulu Valley. In August 1979, an 'Ākepa--probably a juvenile or a female--was seen near the southwestern wall of the Valley at about 6250 feet.

MANAGEMENT RECOMMENDATIONS

Only one of the five endangered species found in the Kīpahulu District has sufficient biological data to allow implementation of highly structured management programs. The four endangered passerines are so poorly known that the best management policy at this point is the protection of habitat integrity. Of vital importance is an active program of habitat protection entailing control and (if possible) elimination of exotic plant pests, such as the strawberry guava (Psidium cattleianum Sabine), and feral animals, such as the goat (Capra hircus L.) and pig (Sus scrofa L.). Most needed at this point is research on the biology of the endangered passerines in the Kīpahulu District; the delineation and dynamics of their critical habitats; and the aspects of disturbance to which these species are particularly susceptible.

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TABLE 1. Bird species found in the Kīpahulu District of Haleakala National Park, 1976-1980 (where * = Endangered).

Exotic (13; 48%)	Endemic (9; 33%)	Indigenous (5; 18%)
Common Myna	*Nēnē	Short-eared Owl
Skylark	*Maui Nukupu'u	Great Frigatebird
Chukar	'Apapane	Wandering Tattler
Northern Cardinal	*Maui 'Ākepa	White-tailed Tropicbird
House Finch	Maui Creeper	Pacific Golden Plover
Chinese Thrush	Maui 'Amakihi	
Barred Dove	*Crested Honeycreeper	
Red-billed Leiothrix	*Maui Parrotbill	
Spotted Munia	'I'iwi	
Ring-necked Pheasant		
Spotted Dove		
Barn Owl		
Japanese White-eye		

Totals: 13 families, 27 species, 6 native subspecies.

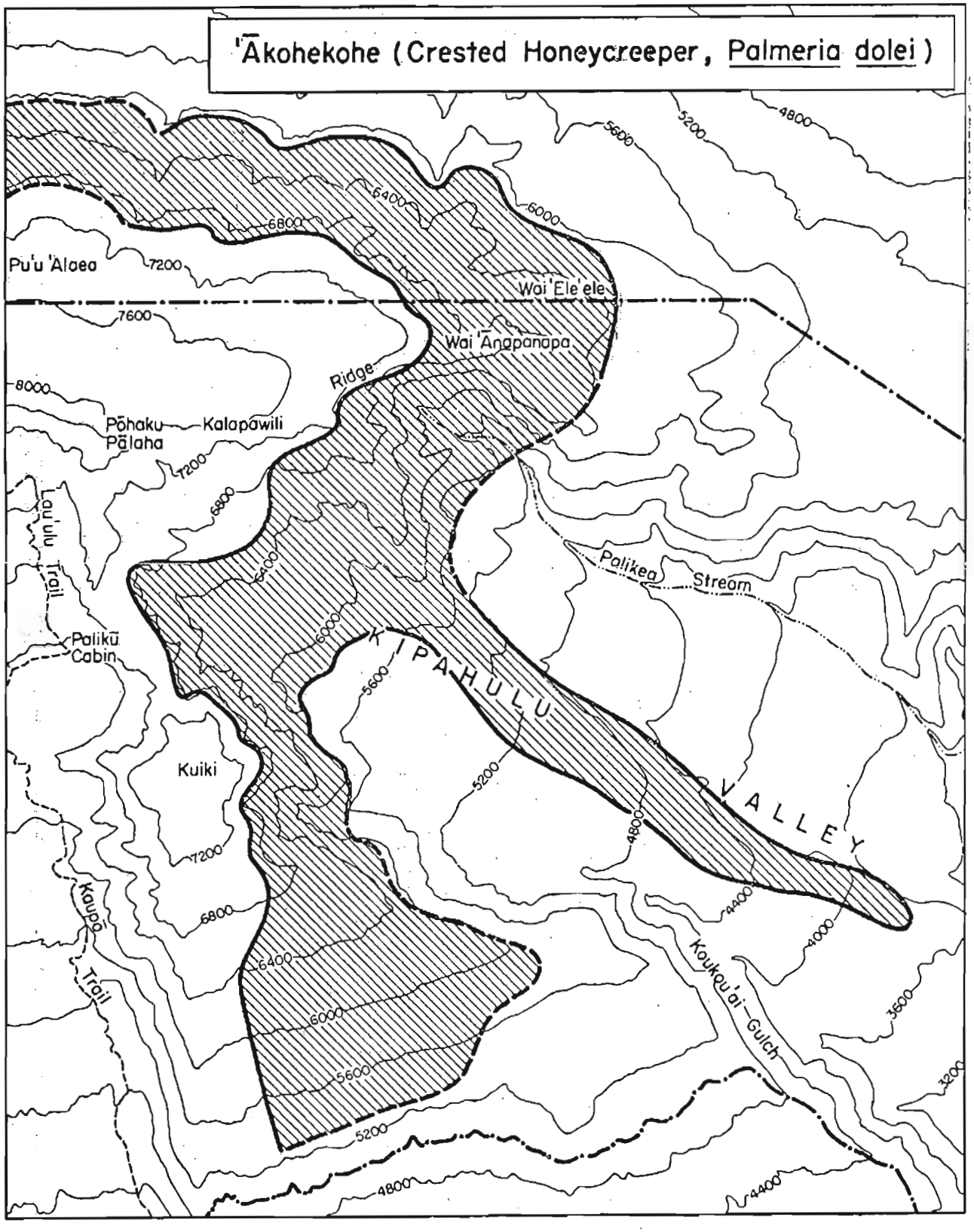

FIGURE 1. Map of the distribution of the Crested Honeycreeper, or 'Akohekohe, in the upper parts of Kīpahulu Valley and the Ko'olau Forest Reserve.

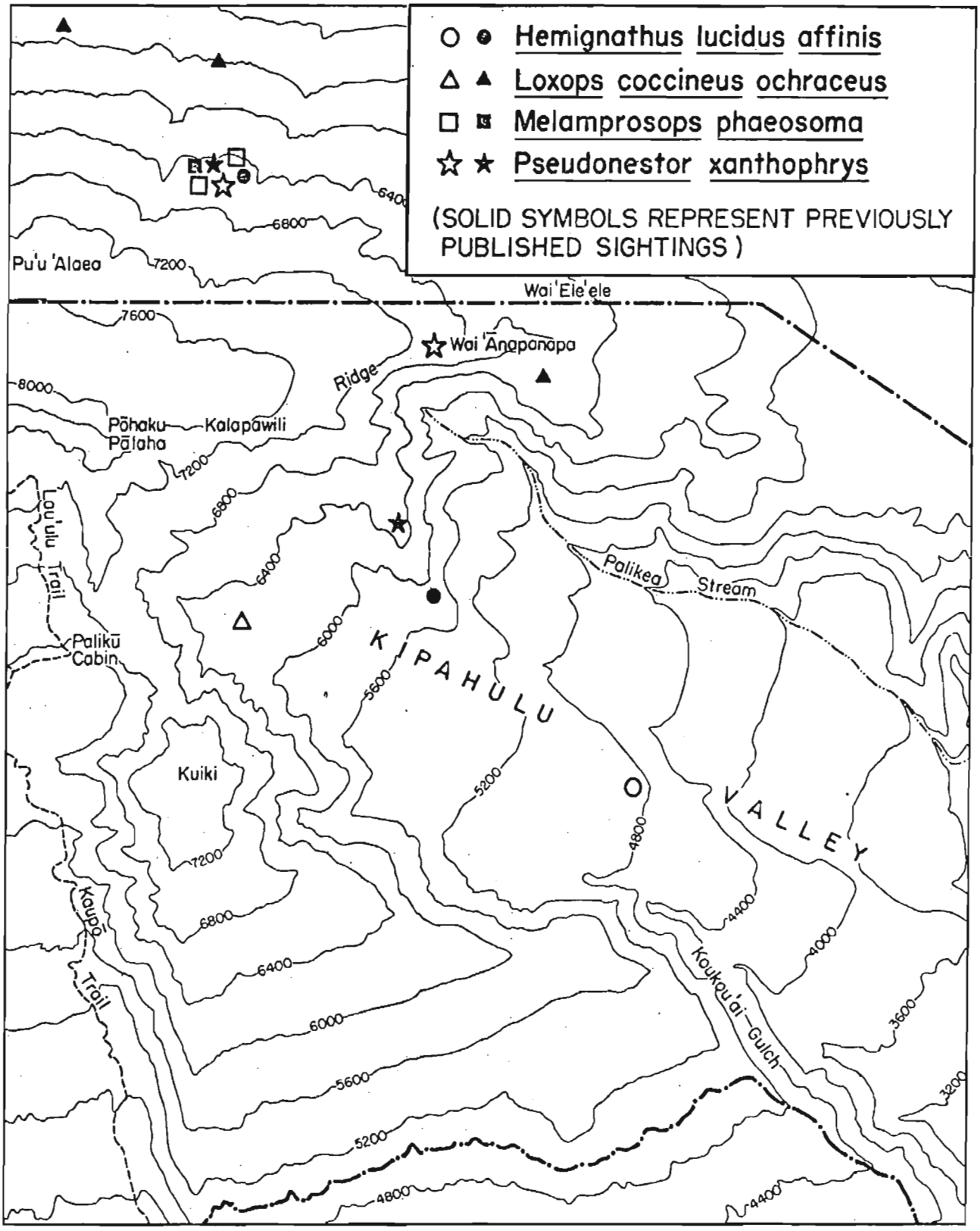

FIGURE 2. Map of recent sighting locations of the Maui Parrotbill, Maui Nukupu'u, Maui 'Akepa, and Po'ouli in the upper parts of Kīpahulu Valley and the Ko'olau Forest Reserve.